

Application No. 09/964,463
Reply to Office Action of

REMARKS

Applicants respectfully request reconsideration of the application, as amended, in view of the following remarks.

In claims 1-20, the first conductive type nitride semiconductor layer is formed on the contact layer made of GaN, and the first conductive type clad layer is formed on the first conductive type nitride semiconductor layer.

In claims 21-23, the n-type nitride semiconductor layer is formed on the n-type GaN layer, and the n-type superlattice clad layer is formed on the n-type nitride semiconductor layer.

In addition, the first conductive type nitride semiconductor layer and the n-type nitride semiconductor layer are made of $\text{Al}_x\text{Ga}_{1-x}\text{N}$ ($0.04 \leq x \leq 0.08$). Therefore, even if the thickness of the first conductive type clad layer is large, no crack is generated in the clad layer.

In contrast, Nagahama et al fail to disclose or suggest the claimed semiconductor nitride layer structure.

On the other hand, in Nagahama et al, the n-type contact layer 12 is formed on the second buffer layer 112 such as $\text{Al}_y\text{Ga}_{1-y}\text{N}$, and the n-side cladding layer 14 is formed on the contact layer 12 through the crack preventing layer 13. The second buffer layer 12 of Nagahama et al is formed below the contact layer 12. Because of this, the structures of the layers in Nagahama et al are completely different from the nitride semiconductor layer of the present invention. In addition, since the second buffer layer 112 of Nagahama et al is formed below the contact layer 12, the second buffer layer 12 does not have a function for increasing the thickness of the clad layer. Furthermore, Nagahama et al never suggest that it is possible to increase the thickness of the clad layer by adjusting the composition ratio y of $\text{Al}_y\text{Ga}_{1-y}\text{N}$ as the material of the second buffer layer 112. It is described that the composition ratio y is set

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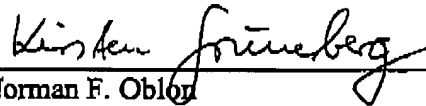
to not more than 0.1 in col. 19, line 31 of Nagahama et al. However, as shown in Fig. 3 according to the present invention, with not more than 0.1 of the composition ratio, it is not assured to increase the thickness of the clad layer. It is possible to increase the thickness of the clad layer by setting the composition ratio x to $0.04 \leq x \leq 0.08$ as claimed in the present invention.

Therefore, the rejection of Claims 1-23 under 35 U.S.C. § 102(e) as anticipated by Nagahama et al. is believed to be unsustainable as the present invention is neither anticipated nor obvious and withdrawal of this rejection is respectfully requested.

This application presents allowable subject matter, and the Examiner is kindly requested to pass it to issue. Should the Examiner have any questions regarding the claims or otherwise wish to discuss this case, he is kindly invited to contact Applicants' below-signed representative, who would be happy to provide any assistance deemed necessary in speeding this application to allowance.

Respectfully submitted,

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